POVERTY AND INFORMALITY:
A RESTRAINING OR CONSTRUCTIVE RELATIONSHIP?

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Abstract

In this paper, we will attempt to find answers to some questions on the factors that help make small/informal enterprises perish or survive; what makes the survivors succeed and graduate or stagnate and barely manage; what happens to the small entrepreneurs' household over time; if they manage to develop their enterprises and thus raise their families' income as time passes, or they remain, small, informal marginal entrepreneurs, with households stuck at the lower end of income and wealth; and if the small and successful enterprise capable of raising the household's socio-economic status or do the poor households hinder the MSE from growing steadily. The paper is divided into sections with an introduction that deals with the methodology and the used panel data sets. Section two covers the changes that occurred to the enterprises between 1998 and 2006. Section three focuses on the factors influencing the success/ failure of small/informal enterprises. Section four discusses the entrepreneur's household status overtime. Section five deals with the relation between the enterprise growth and the household's graduation to a higher wealth status. The last section presents the main conclusion and the policy implications.

ملخص

في هذه الورقة سوف نحاول أن نجد إجابات لبعض الأسئلة حول العوامل التي تساعد علي بقاء المشروعات الصغيرة/ غير الرسمية أو القضاء عليها: ما الذي يجعل المشروعات الباقية تنجح و تتقدم تدريجيا أو تتوقف عن التقدم و تركد و لا تكاد تستطيع تدبر أمرها . ماذا يحدث لأسر صغار المقاولين بمرور الوقت ... ماذا لو استطاعوا أن ينمو مشروعاتهم و يرفعوا من دخول أسرهم بمرور الوقت أو ظلوا مقاولين صغارا مهمشين و ليست لهم أية صفة رسمية، تعيش أسرهم علي اقل دخل و اقل ثروة ...و ماذا لو استطاعت تلك المشروعات الصغيرة الناجحة أن ترتفع الحالة الاجتماعية-الاقتصادية للأسرة ... أم هل تحول الأسر الفقيرة دون نمو (المشروعات الصغيرة و المتوسطة) تدريجيا. هذه الورقة تنقسم إلي أقسام: القسم الأول عبارة عن مقدمة تتعامل مع المنهجية و مجموعات من البيانات المجدولة المستخدمة. القسم الثاني يغطي التغيرات التي طرأت علي المشرعات خلال الفترة من 1998 إلي 2006. يركز القسم الثالث علي العوامل التي تؤثر علي نجاح المشروعات الصغيرة/ غير الرسمية أو فشلها . و يناقش القسم الرابع الحالة الأسرية للمشروعات مع مرور الوقت. أما القسم الخامس فيتناول العلاقة بين نمو المشروع و تدرج الأسرة إلي حالة أعلي من الغني. أما القسم السادس و الأخير فيعرض الخاتمة الرئيسية و آثار السياسة.

Introduction

There has not been a concurrence among economists regarding the effect of the informal sector on poverty. On the one hand it has been argued that the informal sector combats poverty by offering jobs and absorbing labor that would not have found employment otherwise (in the formal economy). It is perceived as socially stabilizing, creating employment and reducing social exclusion (ILO, 2002b). According to the ILO (2002a) "The informal economy absorbs workers who would otherwise be without work or income, especially in developing countries that have a large and rapidly growing labor force, for example in countries where workers are made redundant following structural adjustment programs. Most people enter the informal economy not by choice but out of a need to survive. Especially in circumstances of high unemployment, underemployment and poverty, the informal economy has significant job and income generation potential because of the relative ease of entry and low requirements for education, skills, technology and capital, but the jobs thus created often fail to meet the criteria of decent work. The informal economy also helps to meet the needs of poor consumers by providing accessible and low-priced goods and services."

On the other hand some are of the opinion that even though the informal economy does provide its constituents with some benefits such as flexibility of working hours and convenience of work location, those benefits come at a price. In fact, it has been found that only informal employers, who themselves hire other workers, earn enough to rise over the poverty threshold, meanwhile those who work in informal establishments are often trapped in poverty (Ishengoma and Kappel (2006) and Chen et al. (2006). However, gender matters in this regard. In non-agricultural informal employment, women are more likely to work as own-account workers, domestic workers and unpaid contributing workers in family enterprises, while men are more likely to be employers and wage workers. This contributes to the feminization of poverty.

Furthermore, it has been maintained that since wages in the informal sector are significantly lower than those in the formal economy and its workers lack rights, protection and representation (as has been documented by various studies including ILO (2002a), Chen et al. (2006), Ishengoma and Kappel (2006), Wray (2007) and ILO (2007a)), those operating in the informal sector are trapped in poverty. Many workers in the informal economy are subjected to specific vulnerabilities and insecurities and often experience severe decent work deficits, characterized by poverty and low productivity employment. In fact, poverty is the most significant factor underpinning informality and there is a frequent overlap between the two (even though some individuals operating in the informal sector are not poor) (ILO, 2002b and ILO, 2007b).

According to the ILO (2007b) "One of the key challenges in many developing countries is that weak governance has created environments that are not conducive to job creation or small enterprise development. Macroeconomic, trade and investment policies are not sufficiently focused on employment and this can lead to a bias in favor of capital investment over labor. The legal and institutional environment further engenders a gross misallocation of resources, thereby favoring larger enterprises, for example in allocating import licenses and foreign exchange for importing raw materials. Business registration and formal requirements often involve highly bureaucratic procedures, thereby encouraging firms to remain informal. Poor infrastructure limits market and technical development. Ironically, many targeted programs for small- and micro-enterprises are only stop-gap measures to help firms survive against the adverse effects created by the wider policy environment."

Since employment is one of the main paths through which economic growth can lead to effective poverty reduction, one of the main policy challenges could be to upgrade the quality of working conditions in the informal economy and move labor from the informal to the formal economy (ILO, 2007b).

It is also important to incorporate a sectoral dimension to policy measures aimed at expanding "decent work" employment by targeting sectors with a large informal economy. Policy instruments include infrastructure development, credit facilities, tax relief, skills development and extension services, with emphasis on poverty-alleviating financial services provided to those operating informally. Improving the quality of employment in the agriculture and services sectors is imperative and can be achieved by providing transportation and storage infrastructure, improving access to land and basic financial services, and facilitating the diffusion of productivity-boosting technologies (ILO, 2007b).

In this paper, we will deal with one aspect of the relationship between poverty and informality, namely that of the small entrepreneur, his enterprise and his household wealth or income/expenditure level. Since more than 80% of micro and small enterprises (MSEs) in Egypt are run on an informal basis, several questions were raised with regards the relationship between the ownership of a MSE and the wealth status of the entrepreneur's household. This link between operating a micro or small enterprise and the impact it has on the wealth status of the household has not been investigated before in the Egyptian literature. Therefore, several questions come to our mind in this regard:

Do the small/informal enterprises develop over time, in terms of their scope of activity, clients, formality and number of workers? Are the required skills needed to upgrade the enterprise available to the entrepreneur? What are the factors that help make small/informal enterprises perish or survive? What makes the survivors succeed and graduate or stagnate and barely manage? What happens to the small entrepreneurs' household over time? Do they manage to develop their enterprises and thus raise their families' income as time passes, or do they remain, small, informal marginal entrepreneurs, with households stuck at the lower end of income and wealth? Is the small and successful enterprise capable of raising the household's socio-economic status or do the poor households hinder the MSEs from growing steadily?

In this paper we will attempt to find answers to such questions using the rich and readily available panel datasets.

To answer the previous questions, the paper will proceed as follows. Section one will deal with the methodology and the panel datasets used. Section two will cover the changes that occurred to the enterprises between 1998 and 2006. Section three will focus on the factors influencing the success/failure of small/informal enterprises. Section four will discuss the entrepreneur's household status overtime. Section five will deal with the relation between the enterprise growth and the household's graduation to a higher wealth status. Finally, section six will present the conclusions and policy implications.

1. Methodology

This section presents a detailed description of the data and variables used in the analysis. It also presents a description of the methodology used in the data analysis. This analysis uses the principal components analysis multivariate statistical technique. In addition, random effects pooled time series models are utilized to analyze panel data of the two surveys (1998 and 2006).

1.1 Data

Data used in this study is based on the Egypt Labor Market Surveys (ELMSs). These surveys were conducted in three waves (1988, 1998 and 2006) by the Economic Research Forum (ERF) in cooperation with the Central Agency for Public Mobilization and Statistics (CAPMAS). The questionnaires of the three waves were designed to allow for comparison between them. The 2006 Egypt Labor Market Panel Survey (ELMPS06) was a panel of the 1998 survey. The analysis in this study is based on data from these two surveys, to measure the socioeconomic status of the households in Egypt (see Assaad, 2009) for a detailed description). The panel data was obtained by tracing the same households that were interviewed in 1998. About three-quarters (3,695 of 4,815) of the households included in 1998 wave, were successfully interviewed in the ELMPS06 to render a set of longitudinal data.

The ELMS 1998 survey included about 1,450 households with enterprises and about two thirds of these households were reached by ELMPS06. Half still owned economic units and the other half had closed theirs.

1.2 The construction of the wealth index

In order to compare the households' wealth status in the two comparative years (1998, 2006), a wealth index is constructed. The wealth index is constructed by applying the Principal Components Analysis (PCA) for most durable goods owned by the households, in addition to the ownership of a private car, taxi, truck, motorcycle and bicycle. Applying criteria[1] that excludes variables of weights less than +/-0.04 to enhance the results, the percent of explained variance increases from 22 to 29% in 1998, and from 18 to 24% in 2006. Table 1 shows the results of the PCA before and after deleting some low weight variables (bicycle, motorcycle, taxi and truck).

2. Developments Occurring to the Panel MSEs between 1998 and 2006

One of the main issues that are of concern to us was why some enterprises continue to work and survive difficult times, while others perish?

To answer this question, we try to identify the variables that determine the death of an enterprise versus its survival.

In order to identify these determining factors the 960 enterprises that existed in 1998 were split into two groups: Group 1 for the surviving enterprises (SEs) which were still in operation in 2006 and Group 2 for the dead enterprises (DEs) which had closed down according to their owner household.

A logistic regression model is conducted, with the DE as its dependent variable. Several variables are included as deterministic variables[2]. The variables include the economic activity of the enterprise, the number of workers, the value of capital, operating inside or outside establishment, the legal status of the enterprise, the age of the entrepreneur, and his education and skills, and the poverty status of the HH.

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[1] The Australian Bureau of Statistics, 2000, used similar criteria in calculating the socioeconomic indices for areas, in order to enhance the results and to eliminate the less significant variables.

[2] See Table 1 in the statistical appendix.

Results reveal that several factors matter in the death/survival of a MSE. The MSE tends to perish or close down when it operates outside an establishment, or in other words, when the entrepreneur does not have a permanent premises, like street vendors for example. In such cases—where the entrepreneur operates outside an establishment—the entrepreneur usually takes one of three actions over time. He remains as is, develops the enterprise and chooses to work within a permanent premises, chooses to work as a wage worker in another enterprise or continues operating as a street vendor. However, data revealed that this kind of operator has a higher likelihood to perish as opposed to enterprises working within the boundaries of an establishment.

Other factors that raise the possibility of the enterprise's death are its being a one-man-show enterprise (a sole proprietorship) or its being a micro-sized enterprise that hires less than 5 workers. The female ownership of the enterprise also raises the likelihood of its death, though the results of the regression were not significant. On the other hand, the higher the skill level acquired by the entrepreneur the less likely is the death of the enterprise. While the high skill level of the entrepreneur was a relevant factor in the survival of the enterprise, the educational level did not seem to matter in this respect.

3. Main Changes in the Characteristics of the Surviving MSEs

A close look at the SEs reveals that a few changes took place.

a) The MSEs usually work either within a fixed location like a shop, apartment, workshop, etc., or the entrepreneur moves and operates outside an establishment. The comparative data reveal that some surviving enterprises changed their inside/outside establishment status between the two years as shown in Table 2. The last row shows the distribution of MSEs in 2006, while the last column shows their distribution in 1998. The interesting phenomenon is that the net change was in the direction of outside establishments. The percentage of MSEs operating outside establishment increased from 22 to 28% between 1998 and 2006. This change indicates the unsecure and maybe costly nature of conducting business within fixed boundaries, which drives some of the entrepreneurs to conduct their operations outside an establishment. This negative development is contrary to expectations, as it defies the general trends of older MSEs' development, namely, their movement from conducting their operations outside establishment to inside establishment. Further data analysis revealed that most of these enterprises were conducting trade activities, a relatively high percentage of them were located in Lower-Egypt, and almost all of them employed 4 workers or less. Thus they were mostly marginal enterprises that managed to survive but had to downsize their operations.

b) The share of MSEs in urban areas grew from 58% in 1998 to 60.4% in 2006. One explanatory factor for this change could be the higher death rate amongst the rural enterprises. Smaller market size, lower demand, limited educational levels of entrepreneurs could be considered reasons for the inability of the rural MSEs to survive.

c) As to the distribution of the MSEs according to the number of workers, economic activity or size of capital, there are no significant differences between the two comparative years.

d) Since we are dealing with the same entrepreneurs their age structure changed due to the 8 years time difference between the two surveys.

4. Households' Wealth Status over Time 1998–2006

In 1998 we had a sample of 5,000 households, among which 1,470 households had a household member who owned or ran a MSE. Those households belonged to a particular wealth strata as we will shortly show. This section tries to find answers to the following questions: What happened to the entrepreneurs' HHs between 1998 and 2006? How did their wealth/poverty status develop? We will start by looking into the changes that occurred to

households' wealth and poverty status and in the next section we will try to discuss whether or not these changes were related to changes in their enterprises' performance?

As we discussed before, data in ELMPS06 indicated that out of the 1,470 HHs who owned MSEs in 1998, only 960 HHs were identified.

Only half of the identified HHs still had functioning enterprises, and the other half had closed down. The following analysis will discuss both groups of households with regards to how they fared after eight years had elapsed and also how the survival or death of their enterprise affect their wealth status?

The available data indicates that the wealth of some households increased. This trend is clearly apparent in low-wealth household groups, as can be seen in Table 3.

Table 3 shows that around 40% of the HHs in the lowest quintile in 1998 were able to move up to a higher wealth status. The same trend applies to the three following quintiles. Meanwhile, other quintiles—especially the highest quintile in 1998— experience a drop in their wealth status. However, when comparing the households' wealth distribution in 1998 (reflected in the last column) with that of 2006 (reflected in the last row), one can identify a slight improvement in the HHs' situation in 2006. The change is apparent especially in the last wealth quintile where the percentage of households rose from 28.6% in 1998 to 30.6% in 2006. The question here is why this change occurred and is it related to owning and running an enterprise or did other factors affect the household status?

To answer this we investigated the economic changes that took place during this time span. The period between 1998 and 2006 was considered a recessionary period at least until 2004. The slowdown was associated with the Asian crisis, the Luxor massacre and a severe reduction in investments and other sources of income. This period also witnessed a change in the households' wealth and income distribution. The World Bank's household income/expenditure surveys indicated a rise in poverty prevalence in the Egyptian households from 16.6% (in 1999/2000) to 19.6% (in 2004/2005). In addition, the unemployment rate rose to unprecedented levels until 2004 where it exceeded 10.5%.

As a consequence, and due to the minimal role of both the government and the large private sector companies in employment generation, the MSEs had to bear the brunt of the slowdown either by employing more workers or by the emergence of new MSEs. In such recessionary times it was hard on any household to close down its business and source of livelihood unless it was a totally losing venture.

This brings us back to the impact of having an entrepreneur and an enterprise on the wealth status of the household.

Using the available data, we distinguish between two groups of households, Group 1 includes households that still had operational MSEs (SEs), and Group 2 includes households who closed down their operations (DEs) as described above. Each group is distributed according to wealth quintiles, and then re-classified into three categories of wealth. The three categories are: (a) households that remained in the same wealth position in 2006 as in 1998, which we call Stayers, (b) households that moved to a higher wealth position in 2006, which we call Movers Up and (c) households that moved to a lower wealth position in 2006 which we call Movers Down. Graph 1 reveals the type of change that took place in those two groups of households.

In general, the two household groups witnessed evident movements whether upwards or downwards. However, Graph 1 indicates that the households which managed to keep their enterprises in operation are in a significantly different position than those who closed down.

The percentage of households either staying in the same position or moving upward is higher in group 1, while the percentage of those moving down was relatively higher in group 2.

In an attempt to identify whether the ownership of an enterprise with certain features or having an entrepreneur with a certain educational level, experience, etc. mattered to the household, a logistic regression was conducted on the households that had survived enterprises to understand to what extent the ownership of an enterprise mattered and what were the main factors that affected the households' wealth status.[3]

According to the logistic regression (LR), close to 45% of the households' wealth status in 2006 was explained by some of the characteristics of the enterprise. Of special importance in the determination of wealth was the urban location of the MSE, and its operation within defined boundaries of an establishment. The higher education of the entrepreneur and the gender (being a male) also significantly mattered.

Urbanity has been a determining success factor in previous research studies, since the urban location usually means proximity to larger markets, where the entrepreneurs can find their different inputs requirements and where they can sell their products or services to a wider client base.

In addition, since the sample includes a considerable number of enterprises that operate outside establishments (around 30% of total MSEs), which because of their nature are considered more vulnerable and marginal, the LR confirmed that an enterprise which has an establishment is more likely to succeed become a reliable source of wealth accumulation for the household.

Although some previous studies did not pinpoint education as a significant factor for the success of the entrepreneurs, the LR indicated that it affected the household's wealth status. Higher educational levels had a significant impact on the households' wealth, as reflected in their coefficients. Two factors could explain this result. The first is the growing number and higher share of university graduates within the community of micro and small entrepreneurs. The second is the impact of market opening up, which necessitates continuous improvements in the products and services, to enable them to compete with cheap and relatively acceptable quality of imported products. The education of the entrepreneur helps in understanding the change and responding to it by improving the quality and varying the products and services to respond to the changing market needs.

5. The Determinants of Household's Growth in Wealth Status between 1998 and 2006

Section 4 concluded that there was a slight improvement in the wealth status of some of the poor households, as a significant percentage of them moved upward in the wealth quintiles. This section poses another question. Was it the changes that took place in the enterprise characteristics the determining factor behind the improvement of the households' wealth status between the two years? Or were other exogenous social and economic factors at play?

To answer this question we use both Fixed and Random Effects Models. In the following subsections we explain the two models and the differences between them and why we chose to rely on the Random Effects Model for further analysis.

5.1 Fixed Effects Model

The fixed effects model is suitable for dealing with panel data composed of only two waves (Johnson, 1995). In this case, the model is easy to handle like an ordinary least squares regression analysis. A simple model can be formulated as follows:

$(Y_{i2} - Y_{i1}) = a + b (X_{i2} - X_{i1}) + e_i$, i=1, ...,n

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[3] See Table 2 in the statistical appendix.

Where, **Yij** is the dependent variable for individual i at time j, **Xij** is a vector of the explanatory variables for individual i at time j, **a** is a constant term, **b** is the effect of changes in X on changes in Y and **e** is the error term.

This model can be estimated using an ordinary least squares regression. Another method can be used to estimate the coefficients in a Fixed Effects Model through creating a set of n-1 dummy variables to be added to the OLS regression analysis where **n** is the number of waves included in the analysis. This estimation method only retains the within individual variations in the model.

5.2 Random Effects Model

This method includes an additional assumption that the unobserved variations between individuals are random variables. In this case the model can be formulated as follows:

$Y_{it} = u + bX_{it} + a_i + e_{it}$

Where **u** is an overall constant, **X_{it}** is a vector of explanatory variables for individual i at time t, a_i is constant for time i and **e_{it}** is a within time periods error term.

The Between Effects Model uses only the cross sectional information and asks "what is the expected difference in Y between two households' SEs that differ by 1 in X." While a Fixed Effects Model uses only the time-series information and asks "what is the expected change in the SES (Y) if its values of X increases by 1." The Random Effects Model combines those two questions. The random effects estimator is the weighted average of the within (fixed effects) estimators and the between (group) estimators. The treatment of individual effects can be measured by using the two options (fixed effects and random effects). To chose between using a Fixed Effects Model or a Random Effects Model, a Hausman Test is carried out.

5.3 The Hausman Test (Fixed or Random)

The objective of this test is to verify whether the fixed effects or random effects model is appropriate. Specifically, test H0: $E(u \mid x_{it}) = 0$

If there is no correlation between regressors and effects (don't reject H0, then fixed effects and random effects are both consistent, but fixed effects is inefficient.

Calculate $\hat{\beta}_{RE} - \hat{\beta}_{FE}$ and its covariance. If there is correlation, FE is consistent and RE is inconsistent (Reject H0). Under the null hypothesis of no correlation, there should be no differences between the two estimators. The covariance of an efficient estimator with its difference from an inefficient estimator should be zero. Thus, under the null hypothesis we test:

$$W = (\beta_{RE} - \beta_{FE})' \hat{\Sigma}^{-1} (\beta_{RE} - \beta_{FE}) \sim \chi^2(k)$$

If W is significant, we should not use the random effects estimator.

5.4 Results of the Random Effects Model

In order to understand the relationship between changes in households' wealth status and changes in the characteristics of the enterprise, the entrepreneur and the household itself, three Random Effects Models of regressions are run[4].

The first model includes the main characteristics of the MSE and its owner: such as the legal status, the informality, the number of workers, the economic activity, the value of capital, the location of enterprise (urban/rural), being inside/outside an establishment, the sex of the owner and the acquired skills of the entrepreneur.

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[4] See Table 3 in the statistical appendix.

The second model includes the variables in the first model in addition to the poverty status of the household (in terms of expenditures) and the education of the entrepreneur.

The third model includes the variables in the second model in addition to the household size, the number of household members under 14 years and the percentage of unemployed to total household size.

The results of the three models reveal several interesting results.

The third model, as opposed to the first two models, provides a better explanation of the improvement in the households' wealth status (R-squared = 0.3983), since around 40% of the variations were explained by changes in the variables.

When we distinguish between the influence of the "within factors" and the "between factors" we realize that the socio-economic variables surrounding each household in the sample, and its relative position to other families in the same sphere play a more robust and influential role in determining its wealth status.

The factors that changed and thus played a crucial role in raising the households' wealth status between the two comparative years include:

a) The change in the formality status of the enterprise and its relative stability in the market played a major role in changing the household's wealth status and its ability to move to a higher wealth quintile. Whereas, leading an informal enterprise had the exact opposite effect.

b) The change in the geographical location of the enterprise to urban areas has proven to be of positive influence on the socioeconomic status of the household. The proximity to larger markets and the ability to provide services to higher income household groups could be a reason for the improvement in the enterprise and thus the household's wealth.

c) The growth in the size of MSEs —especially in the employment category of more than 4 workers or capital size that is more than LE 10,000— was associated with a more positive impact on the household's wealth status, whilst the small and stagnant size of MSEs played a negative role on the ability of the household to graduate to a higher wealth quintile.

d) The older age of the entrepreneur, which is usually associated with more work experience proved to play a significant role in improving the household's wealth status and the same could be said for the education of the entrepreneur. Data revealed that entrepreneurs with elementary education fared better in improving their households' wealth status.

e) Data also revealed that the change or increase in the number of children in the household between the two years affected the household's wealth negatively.

6. Conclusion and Policy Recommendations
The previous study has managed to reach a number of conclusions.

MSEs more likely to survive are of larger sizes (more than 4 workers and relatively high levels of capital), operate in an establishment and are usually male-owned. This result indicates that any policy aiming to sustain and develop MSEs should help them increase their capital through providing continuous and secure access to finance and technical assistance. That in turn could be helpful in increasing their size—of operations and transactions—and raising their efficiency and productivity.

Offering suitable work premises, attached with the necessary infrastructure is also a necessary condition for their ability to survive and thrive in a competitive market. The new

industrial cities and the new domestic trade areas should designate a space for MSEs, which could help in establishing cluster communities, where the exchange of expertise, subcontracting possibilities and training of workers becomes viable.

The positive changes in the enterprise or the entrepreneur's characteristics affect the household's wealth status positively. These positive changes could be triggered and enhanced by continuous training programs that target both entrepreneur and workers which are necessary enabling conditions. Training in areas such as domestic and international marketing, technical aspects of the production process, legal, financial and administrative procedures is required to enable the enterprise to improve their products, add new lines and innovate. Such developments will reflect positively on the entrepreneurs' and also the workers' income and wealth status, and thus will help in poverty reduction.
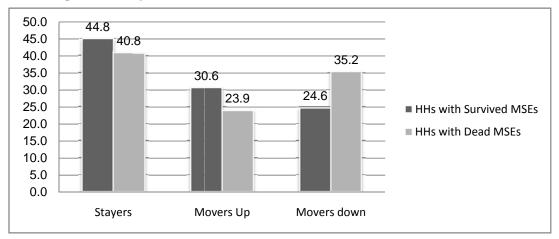
Any policy that aims to alleviate poverty should work on raising the skills of the micro and small entrepreneurs, provide them with the necessary technical knowledge and encourage them through various incentives to expand their enterprises and increase its efficiency.

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Figure 1: Distribution of the Households' Owning Surviving and Dead Enterprises according to Mobility in the Wealth Index

Table 1: Matrix Principal Component Factor Loadings (weights) for the Wealth Index

Item	Weights Before		Weights After	
Years	1998	2006	1998	2006
Fridge	0.3094	0.2682	0.3107	0.2684
Freezer	0.1733	0.2332	0.1742	0.2345
Dish Washer	0.1054	0.164	0.1056	0.1653
Color TV	0.3203	0.2959	0.3218	0.2962
Black and White TV	-0.1704	-0.2135	-0.1729	-0.2147
Video	0.2381	0.2595	0.24	0.2611
Air Condition	0.1594	0.2482	0.1607	0.2497
Microwave	0.0467	0.1628	0.047	0.1638
Cooker	0.2712	0.2219	0.2721	0.2218
Kerosene Cooker	-0.2221	-0.1846	-0.2241	-0.1859
Elect. Fan	0.2676	0.2037	0.2679	0.2025
Water Heater	0.3143	0.3037	0.3168	0.3048
Heater	0.186	0.2103	0.1877	0.2111
Sewing Mach.	0.1686	0.1319	0.1686	0.131
Iron	0.3007	0.2864	0.3009	0.286
Radio	0.1977	0.2024	0.1975	0.2021
Washing Mach.	0.2443	0.1905	0.245	0.1899
Camera	0.219	0.2226	0.2198	0.2223
Bicycle	0.0779	0.0485		
Motorcycle	0.0387	0.0291		
Private Car	0.2097	0.2574	0.2121	0.2587
Taxi	0.0249	0.0152		
Truck	0.0403	0.0316		

Table 2: The Inside/ Outside Status of the Surviving MSEs between 1998 and 2006

MSEs 1998	MSEs 2006		Total MSEs 2006	% Distribution in 1998
	Outside Est. 2006	Inside Est.2006		
Outside Est. 1998	195,800	38,642	234,442	22.08
Inside Est. 1998	107,350	719,905	827,255	77.92
Total MSEs 1998	303,150	758,547	1,061,697	
% Distribution in 2006	28.55	71.45		100

Source: ELMS98 and ELMPS2006 data files.

Table 3: The Wealth Distribution of HHs in the Two Comparative Years

Wealth Quintiles 1998	Wealth Quintiles 2006						
	1	2	3	4	5	%	%
1	60.83	24.93	6.55	6.87	0.82	100	15.9
2	24.22	35.47	19.10	13.99	7.22	100	16.0
3	6.70	17.48	32.56	26.23	17.03	100	18.6
4	2.95	14.06	32.61	19.99	30.39	100	20.8
5	0.58	4.80	9.16	16.29	69.17	100	28.6
Total	15.6	17.2	19.6	17.0	30.6	100	100

Statistical Appendix

Table 1: Determinants of Death/Survival of MSEs in 1998

xi: logit Dead experience98 informal_98 i.Legal_Sts_98 EntEcoAct1d981-EntEcoAct1d985 i.urban_98
i.TotNumWrkrEntGrp_98 i.valuekap_98 IN_OUT_98 age_98 ageSqr_98 i.educ_3Cat_98 i.sex_98 skillacq_98

i.Legal_Sts_98   _ILegal_Sts_1-2   (naturally coded; _ILegal_Sts_1 omitted)

i.urban_98   _Iurban_98_1-2   (naturally coded; _Iurban_98_1 omitted)

i.TotNumWr~p_98 _ITotNumWrk_0-3   (naturally coded; _ITotNumWrk_0 omitted)

i.valuekap_98   _Ivaluekap__0-7   (naturally coded; _Ivaluekap__0 omitted)

i.educ_3Cat_98   _Ieduc_3Cat_1-3   (naturally coded; _Ieduc_3Cat_1 omitted)

i.sex_98   _Isex_98_1-2   (naturally coded; _Isex_98_1 omitted)

Iteration 0:   log likelihood = -273.8835

Iteration 1:   log likelihood = -240.76173

Iteration 2:   log likelihood = -239.10502

Iteration 3:   log likelihood = -239.09436

Iteration 4:   log likelihood = -239.09435

Logistic regression   Number of obs   =   507

                                       LR chi2(25)   =   69.58
                                       Prob > chi2   =   0.0000

Log likelihood = -239.09435   Pseudo R2   =   0.1270

experience98	-0.0140211	0.0217001	-0.65	0.518	-0.0565526	0.0285104
informal_98	0.0126019	0.2877751	0.04	0.965	-0.5514269	0.5766307
_ILegal_St~2	0.7595884	0.3744038	2.03	0.042	0.0257704	1.493406
EntEcoAc~981	0.0900959	0.4772043	0.19	0.85	-0.8452073	1.025399
EntEcoAc~982	-0.8908453	0.8028519	-1.11	0.267	-2.464406	0.6827154
EntEcoAc~983	-0.3394788	0.4384052	-0.77	0.439	-1.198737	0.5197795
EntEcoAc~984	0.3011637	0.5908583	0.51	0.61	-0.8568973	1.459225
EntEcoAc~985	-1.02988	1.01358	-1.02	0.31	-3.01646	0.9567008
_Iurban_98_2	0.4662861	0.2670236	1.75	0.081	-0.0570705	0.9896427
_ITotNumWr~1	-2.391284	0.9540727	-2.51	0.012	-4.261233	-0.5213363
_ITotNumWr~2	-2.835664	1.129588	-2.51	0.012	-5.049616	-0.6217118
_ITotNumWr~3	-2.154715	1.142954	-1.89	0.059	-4.394864	0.0854329
_Ivaluekap~1	1.553093	1.000031	1.55	0.12	-0.4069318	3.513118
_Ivaluekap~2	0.7884709	0.674754	1.17	0.243	-0.5340226	2.110964
_Ivaluekap~3	-0.1871349	0.7333758	-0.26	0.799	-1.624525	1.250255
_Ivaluekap~4	0.3612158	0.6913699	0.52	0.601	-0.9938443	1.716276
_Ivaluekap~5	-0.2814811	0.7591534	-0.37	0.711	-1.769394	1.206432
_Ivaluekap~6	-0.0777451	0.685083	-0.11	0.91	-1.420483	1.264993
IN_OUT_98	0.7531664	0.3464871	2.17	0.03	0.074064	1.432269
age_98	0.0146284	0.0783628	0.19	0.852	-0.1389598	0.1682165
ageSqr_98	0.0003542	0.0007682	0.46	0.645	-0.0011514	0.0018598
_Ieduc_3Ca~2	0.3848982	0.3072524	1.25	0.21	-0.2173055	0.9871019
_Ieduc_3Ca~3	0.2724441	0.4235075	0.64	0.52	-0.5576154	1.102504
_Isex_98_2	0.815406	0.5793218	1.41	0.159	-0.3200439	1.950856
skillacq_98	-0.1699546	0.0837166	-2.03	0.042	-0.334036	-0.0058731
_cons	-0.5052554	1.995828	-0.25	0.8	-4.417006	3.406495

Table 2: The Role of MSEs in Determining the Household's Wealth

xi: reg qwlthall_06 i.lglstsco_06 i.EntEcoAct1d_06 i.urban_06 i.TotNumWrkrEntGrp_06

> i.valuekap_06 Poor_exp06 Poor_inc06 InOutEstab_06 age_06 ageSqr_06 i.educ2_06 i.sex_0

> 6 i.skillacq_06 if Dead==0 & EntEcoAct1d_06!=1

i.lglstsco_06   _Ilglstsco__1-5   (naturally coded; _Ilglstsco__1 omitted)

i.EntEcoAct1~06   _IEntEcoAct_1-9   (naturally coded; _IEntEcoAct_1 omitted)

i.urban_06   _Iurban_06_1-2   (naturally coded; _Iurban_06_1 omitted)

i.TotNumWr~p_06   _ITotNumWrk_1-5   (naturally coded; _ITotNumWrk_1 omitted)

i.valuekap_06   _Ivaluekap__1-7   (naturally coded; _Ivaluekap__1 omitted)

i.educ2_06   _Ieduc2_06_1-8   (naturally coded; _Ieduc2_06_1 omitted)

i.sex_06   _Isex_06_1-2   (naturally coded; _Isex_06_1 omitted)

i.skillacq_06   _Iskillacq__1-5   (naturally coded; _Iskillacq__1 omitted)

Source | SS   df   MS   Number of obs =   207

_Ilglstsco~2	0.2469964	0.2896529	0.85	0.395	-0.3247592	0.8187521
_Ilglstsco~3	(dropped)					
_Ilglstsco~4	(dropped)					
_Ilglstsco~5	-0.6516588	1.283185	-0.51	0.612	-3.184581	1.881263
_IEntEcoAc~2	-0.9251818	0.9682111	-0.96	0.341	-2.836367	0.986003
_IEntEcoAc~3	-0.491382	0.9454907	-0.52	0.604	-2.357718	1.374954
_IEntEcoAc~4	-0.5822673	1.001144	-0.58	0.562	-2.558459	1.393924
_IEntEcoAc~5	-0.3827666	0.9079687	-0.42	0.674	-2.175037	1.409504
_IEntEcoAc~6	-0.612393	0.9920108	-0.62	0.538	-2.570557	1.345771
_IEntEcoAc~7	-0.3024429	0.9192678	-0.33	0.743	-2.117017	1.512131
_IEntEcoAc~8	(dropped)					
_IEntEcoAc~9	-0.770135	0.9709199	-0.79	0.429	-2.686667	1.146397
_Iurban_06_2	1.115794	0.2030755	5.49	0	0.7149367	1.516652
_ITotNumWr~2	0.326489	0.4013729	0.81	0.417	-0.4657945	1.118772
_ITotNumWr~3	0.7140187	0.5612812	1.27	0.205	-0.3939132	1.821951
_ITotNumWr~4	0.0337429	0.9209508	0.04	0.971	-1.784153	1.851639
_ITotNumWr~5	0.662266	1.270331	0.52	0.603	-1.845284	3.169816
_Ivaluekap~2	-0.4728746	0.4530632	-1.04	0.298	-1.367192	0.4214423
_Ivaluekap~3	-0.1721658	0.4740672	-0.36	0.717	-1.107943	0.7636116
_Ivaluekap~4	-0.4558913	0.4392345	-1.04	0.301	-1.322911	0.4111285
_Ivaluekap~5	-0.0183205	0.4210337	-0.04	0.965	-0.8494133	0.8127722
_Ivaluekap~6	0.4613012	0.4194171	1.1	0.273	-0.3666005	1.289203
_Ivaluekap~7	0.0192041	0.6625177	0.03	0.977	-1.288562	1.32697
Poor_exp06	(dropped)					
Poor_inc06	(dropped)					
InOutEsta~06	0.552723	0.2723306	2.03	0.044	0.0151603	1.090286
age_06	0.028458	0.0740377	0.38	0.701	-0.1176874	0.1746035
ageSqr_06	-0.0000959	0.0006901	-0.14	0.89	-0.0014581	0.0012663
_Ieduc2_06_2	0.4123033	0.2710863	1.52	0.13	-0.1228033	0.9474098
_Ieduc2_06_3	0.9438271	0.2712824	3.48	0.001	0.4083336	1.479321
_Ieduc2_06_4	0.4370975	0.3428411	1.27	0.204	-0.2396481	1.113843
_Ieduc2_06_5	0.4398075	0.7831911	0.56	0.575	-1.10616	1.985775
_Ieduc2_06_6	0.8169033	0.2858289	2.86	0.005	0.2526959	1.381111
_Ieduc2_06_7	0.9758854	0.6304362	1.55	0.123	-0.2685541	2.220325
_Ieduc2_06_8	1.09698	0.3638667	3.01	0.003	0.3787313	1.815229
_Isex_06_2	-1.250037	0.5553725	-2.25	0.026	-2.346305	-0.153768
_Iskillacq~2	-0.5995967	0.6591904	-0.91	0.364	-1.900795	0.7016016
_Iskillacq~3	-0.0063529	0.6493101	-0.01	0.992	-1.288048	1.275342
_Iskillacq~4	-0.6469918	0.4403138	-1.47	0.144	-1.516142	0.2221586
_Iskillacq~5	-0.6639268	0.4230572	-1.57	0.118	-1.499014	0.1711602
_cons	2.065476	2.186568	0.94	0.346	-2.250665	6.381616

Table 3: The Three Scenarios of the Random Effects Model

Random Effects Model 1

. xi: xtreg WealthIndex informal i.Newlglstsco i.NewEaActReg i.urban i.NewTotNumWrkrEntGrp

i.Newvalueka

> p i.InOutEstab if Own98No06==1 | Own98Own06==1

i.Newlglstsco   _INewlglsts_0-1   (naturally coded; _INewlglsts_0 omitted)

i.NewEaActReg   _INewEaActR_0-4   (naturally coded; _INewEaActR_0 omitted)

i.urban   _Iurban_1-2   (naturally coded; _Iurban_1 omitted)

i.NewTotNumWr~p _INewTotNum_0-1   (naturally coded; _INewTotNum_0 omitted)

i.Newvaluekap   _INewvaluek_1-3   (naturally coded; _INewvaluek_1 omitted)

i.InOutEstab   _IInOutEsta_0-1   (naturally coded; _IInOutEsta_0 omitted)

Random-effects GLS regression   Number of obs = 880

Group variable (i): NindId   Number of groups = 518

R-sq: within = 0.0070   Obs per group: min =1

      between = 0.3887   avg = 1.7

      overall = 0.3008   max = 2

Random effects u_i ~ Gaussian   Wald chi2(11) = 225.14

corr(u_i, X) = 0 (assumed)   Prob > chi2 = 0.0000

WealthIndex		Coef.	Std. Err.	z	P > |z|	[95% Conf. Interval]	
informal		-.6144554	.1435766	-4.28	0.000	-.8958604	-.3330505
_INewlglst~1		-.2749443	.1946342	-1.41	0.158	-.6564202	.1065317
_INewEaAct~1		1.959252	1.023443	1.91	0.056	-.0466591	3.965163
_INewEaAct~2		1.573825	.8787515	1.79	0.073	-.1484968	3.296146
_INewEaAct~3		1.353242	.8694121	1.56	0.120	-.3507746	3.057258
_INewEaAct~4		1.317691	.8670968	1.52	0.129	-.3817871	3.01717
_Iurban_2		-.9255891	.1780921	-5.20	0.000	-1.274643	-.576535
_INewTotNu~1		.9721729	.353583	2.75	0.006	.2791629	1.665183
_INewvalue~2		.7290336	.1529946	4.77	0.000	.4291697	1.028897
_INewvalue~3		1.420917	.160373	8.86	0.000	1.106592	1.735243
_IInOutEst~1		.4032317	.1842365	2.19	0.029	.0421348	.7643285
_cons		-.8948913	.8880559	-1.01	0.314	-2.635449	.8456662

-------------+---

        sigma_u | 1.2444695

        sigma_e | 1.2895067

        rho | .48223226   (fraction of variance due to u_i)

Random Effects Model 2

. xi: xtreg WealthIndex informal i.Newlglstsco i.NewEaActReg i.urban i.NewTotNumWrkrEntGrp

i.Newvalueka

> p i.InOutEstab Experience ExperienceSqr age ageSqr i.educ2Cat i.sex if Own98No06==1 |

Own98Own06==1

i.Newlglstsco   _INewlglsts_0-1   (naturally coded; _INewlglsts_0 omitted)

i.NewEaActReg   _INewEaActR_0-4   (naturally coded; _INewEaActR_0 omitted)

i.urban   _Iurban_1-2   (naturally coded; _Iurban_1 omitted)

i.NewTotNumWr~p _INewTotNum_0-1   (naturally coded; _INewTotNum_0 omitted)

i.Newvaluekap   _INewvaluek_1-3   (naturally coded; _INewvaluek_1 omitted)

i.InOutEstab   _IInOutEsta_0-1   (naturally coded; _IInOutEsta_0 omitted)

i.educ2Cat   _Ieduc2Cat_1-2   (naturally coded; _Ieduc2Cat_1 omitted)

i.sex   _Isex_1-2   (naturally coded; _Isex_1 omitted)

Random-effects GLS regression   Number of obs = 879

Group variable (i): NindId   Number of groups = 517

R-sq: within = 0.0126   Obs per group: min = 1

between = 0.4734   avg = 1.7

overall = 0.3946   max = 2

Random effects u_i ~ Gaussian   Wald chi2(17) = 399.77

corr(u_i, X) = 0 (assumed)   Prob > chi2 = 0.0000

WealthIndex |	Coef.	Std. Err.	z	P > |z|	[95% Conf. Interval]	
informal |	-.4203619	.1477987	-2.84	0.004	-.7100421	-.1306818
_INewlglst~1 |	-.0971699	.1876913	-0.52	0.605	-.4650381	.2706984
_INewEaAct~1 |	1.507553	.9887407	1.52	0.127	-.4303436	3.445449
_INewEaAct~2 |	1.478754	.8376174	1.77	0.077	-.1629455	3.120454
_INewEaAct~3 |	1.220177	.8288492	1.47	0.141	-.4043372	2.844692
_INewEaAct~4 |	1.156361	.8320994	1.39	0.165	-.4745236	2.787246
_Iurban_2 |	-.7601252	.164747	-4.61	0.000	-1.083023	-.4372269
_INewTotNu~1 |	.9473509	.3339539	2.84	0.005	.2928133	1.601888
_INewvalue~2 |	.6033985	.1467883	4.11	0.000	.3156987	.8910982
_INewvalue~3 |	1.119094	.1572654	7.12	0.000	.8108598	1.427329
_IInOutEst~1 |	.387592	.1993853	1.94	0.052	-.003196	.77838
Experience |	-.0010288	.0044931	-0.23	0.819	-.0098351	.0077776
Experience~r |	5.56e-07	2.28e-06	0.24	0.807	-3.91e-06	5.03e-06
age |	.1160445	.0467201	2.48	0.013	.0244748	.2076142
ageSqr |	-.0010372	.0004473	-2.32	0.020	-.0019138	-.0001606
_Ieduc2Cat_2 |	1.471399	.1595185	9.22	0.000	1.158748	1.78405
_Isex_2 |	-1.332591	.295526	-4.51	0.000	-1.911811	-.7533706
_cons |	-4.30669	1.549393	-2.78	0.005	-7.343446	-1.269935

sigma_u \| 1.0917815
sigma_e \| 1.2788138
rho \| .42159132   (fraction of variance due to u_i)

Random Effects Model 3

. xi: xtreg WealthIndex informal i.Newlglstsco i.NewEaActReg i.urban i.NewTotNumWrkrEntGrp i.Newvalueka

> p i.InOutEstab Experience ExperienceSqr age ageSqr i.educ2Cat i.sex UnemSr1To15OrMore PctNo0_14Yrs h

> hsize childLabor if Own98No06==1 | Own98Own06==1

i.Newlglstsco   _INewlglsts_0-1   (naturally coded; _INewlglsts_0 omitted)

i.NewEaActReg   _INewEaActR_0-4   (naturally coded; _INewEaActR_0 omitted)

i.urban   _Iurban_1-2   (naturally coded; _Iurban_1 omitted)

i.NewTotNumWr~p _INewTotNum_0-1   (naturally coded; _INewTotNum_0 omitted)

i.Newvaluekap   _INewvaluek_1-3   (naturally coded; _INewvaluek_1 omitted)

i.InOutEstab   _IInOutEsta_0-1   (naturally coded; _IInOutEsta_0 omitted)

i.educ2Cat   _Ieduc2Cat_1-2   (naturally coded; _Ieduc2Cat_1 omitted)

i.sex   _Isex_1-2   (naturally coded; _Isex_1 omitted)

note: childLabor dropped due to collinearity

Random-effects GLS regression   Number of obs   = 879

Group variable (i): NindId   Number of groups = 517

R-sq: within = 0.0196   Obs per group: min = 1

    between = 0.4765   avg = 1.7

    overall = 0.3983   max = 2

Random effects u_i ~ Gaussian   Wald chi2(20) = 403.96

corr(u_i, X) = 0 (assumed)   Prob > chi2   = 0.0000

WealthIndex	Coef.	Std. Err.	z	P > |z|	[95% Conf. Interval]	
informal	-.4087578	.1481386	-2.76	0.006	-.6991041	-.1184116
_INewlglst~1	-.113296	.187251	-0.61	0.545	-.4803011	.2537092
_INewEaAct~1	1.401563	.9867284	1.42	0.155	-.5323889	3.335515
_INewEaAct~2	1.422173	.8364189	1.70	0.089	-.2171778	3.061524
_INewEaAct~3	1.151565	.827398	1.39	0.164	-.4701057	2.773235
_INewEaAct~4	1.108272	.8305159	1.33	0.182	-.5195088	2.736054
_Iurban_2	-.8032402	.1675569	-4.79	0.000	-1.131646	-.4748347
_INewTotNu~1	.905065	.3336226	2.71	0.007	.2511767	1.558953
_INewvalue~2	.6295761	.1467186	4.29	0.000	.3420128	.9171394
_INewvalue~3	1.132855	.1574823	7.19	0.000	.8241952	1.441514
_IInOutEst~1	.3944237	.1988915	1.98	0.047	.0046036	.7842439
Experience	.001097	.0045527	0.24	0.810	-.0078261	.0100202
Experience~r	-5.01e-07	2.31e-06	-0.22	0.828	-5.03e-06	4.03e-06
age	.0990056	.0474478	2.09	0.037	.0060096	.1920016
ageSqr	-.0009285	.0004533	-2.05	0.041	-.0018169	-.0000402
_Ieduc2Cat_2	1.511194	.1609038	9.39	0.000	1.195828	1.826559
_Isex_2	-1.267285	.3081897	-4.11	0.000	-1.871326	-.6632442
UnemSr1To1~e	-.0037372	.0052493	-0.71	0.476	-.0140257	.0065512
PctNo0_14Yrs	-.0080905	.0035691	-2.27	0.023	-.0150857	-.0010952
hhsize	.0615627	.0334809	1.84	0.066	-.0040587	.1271841
_cons	-3.934288	1.563912	-2.52	0.012	-6.9995	-.8690769

```
        sigma_u |  1.0974354
        sigma_e |  1.2610506
            rho |  .43095928   (fraction of variance due to u_i)
-----------------------------------------------------------------------------
```

log close   log: I:\WB-Prject\Models.log   log type: text   closed on: 19 Feb 2009, 06:36:54